PORTLAND CEMENT-TREATED BASE
FIELD SECTION 308

308.1 Scope. To establish procedures for sampling and testing aggregates, soil, and blending soil (when necessary) to determine the cement requirement for design and construction of portland cement-treated base. The portland cement, water, and liquid asphalt used in the construction of portland cement-treated base shall be inspected in accordance with the applicable sections of this manual and the project proposal.

308.2 Apparatus. Picks, shovels, or drilling equipment to obtain representative samples.

308.3 Procedure.

308.3.1 It is the responsibility of the individual making the soil or material survey to determine that an adequate quantity of material is available and that representative samples are obtained. It may be necessary to determine the range of gradation and plasticity of the material in order to select representative samples. Samples shall be submitted to the Laboratory, accompanied by Form T-617, during or as soon after the survey as possible for tests which will be used by the Soils and Geology Section in recommending a cement content. This recommendation will then be used in the pavement type selection analysis. If portland cement-treated base becomes part of the pavement design, a specific gradation will be established for the project to insure a reasonably uniform product and will be included in the project proposal. After the awarding of a contract where portland cement-treated base is part of the design, it will be necessary to submit samples of the produced material, in accordance with Specification Sec 308.12.1, for determination of the actual cement requirement for the project. The sampling procedures and requirements are the same for both types of samples mentioned above.

308.3.2 Aggregate base materials conforming to Specification Sec 1007, except Type 4 Aggregate, are suitable for making portland cement-treated base. Limiting the maximum amount retained on the No. 4 [4.75 mm] sieve to 55 percent results in a more uniform product with a lower cement requirement. The cement requirement will normally be determined on the coarsest, average, and finest gradation permitted by the Specifications. A sample shall consist of a minimum of three full sample bags of the aggregate base material.

308.3.3 Granular material (deficient in fines) mixed with blending soil can be used to make satisfactory portland cement-treated base. Some typical sources of the granular materials are sand and gravel bars or deposits, granular material pumped from a river or pit, and chat piles. It is necessary to have a friable soil to blend with these granular materials to produce a material with relatively uniform characteristics of maximum density, optimum moisture, and cement requirement. Friable soil is defined as having a maximum liquid limit of 40 and a maximum plasticity index of 15. Multiple samples shall be submitted to encompass the range of gradation and plasticity of the materials available or selected for use. A sample shall consist of a minimum of two full sample bags of the granular material (or materials) and one full sample bag of the blending soil. A gradation will be specified in the project contract.

308.3.4 Granular soil deposits usually require blending to improve the uniformity of the product. Multiple samples shall be submitted to encompass the range of gradation of materials available or selected for use. A sample shall consist of a minimum of two full sample bags of each material. A gradation shall be determined for the material, based on Laboratory tests, and will then be specified in the project proposal.

308.3.5 Fine grained soils will not be considered for portland cement-treated base or blending soils unless they have a liquid limit of 40 or less and a plasticity index of 15 or less. Multiple samples shall be submitted to

encompass the range of gradation and plasticity of the materials available or selected for use. If submitted to the Laboratory for tests as a component of portland cement-treated base, a sample shall consist of two full sample bags of each of the fine grained soils. If samples are submitted for preliminary tests to determine suitability for blending soil, based on PI, 4 lbs. [2 kg] of each of the various plasticities encountered is sufficient.

308.3.6 Field testing of the produced material shall consist of gradation, liquid limit, plastic limit, and plasticity index. These tests for compliance with the limits established in the project proposal shall be performed in accordance with Field Sec 1001 of this Manual.

308.4 Report. Field test results shall be reported on Form T-602.